USERS MANUAL

HPS

HEARTWAY

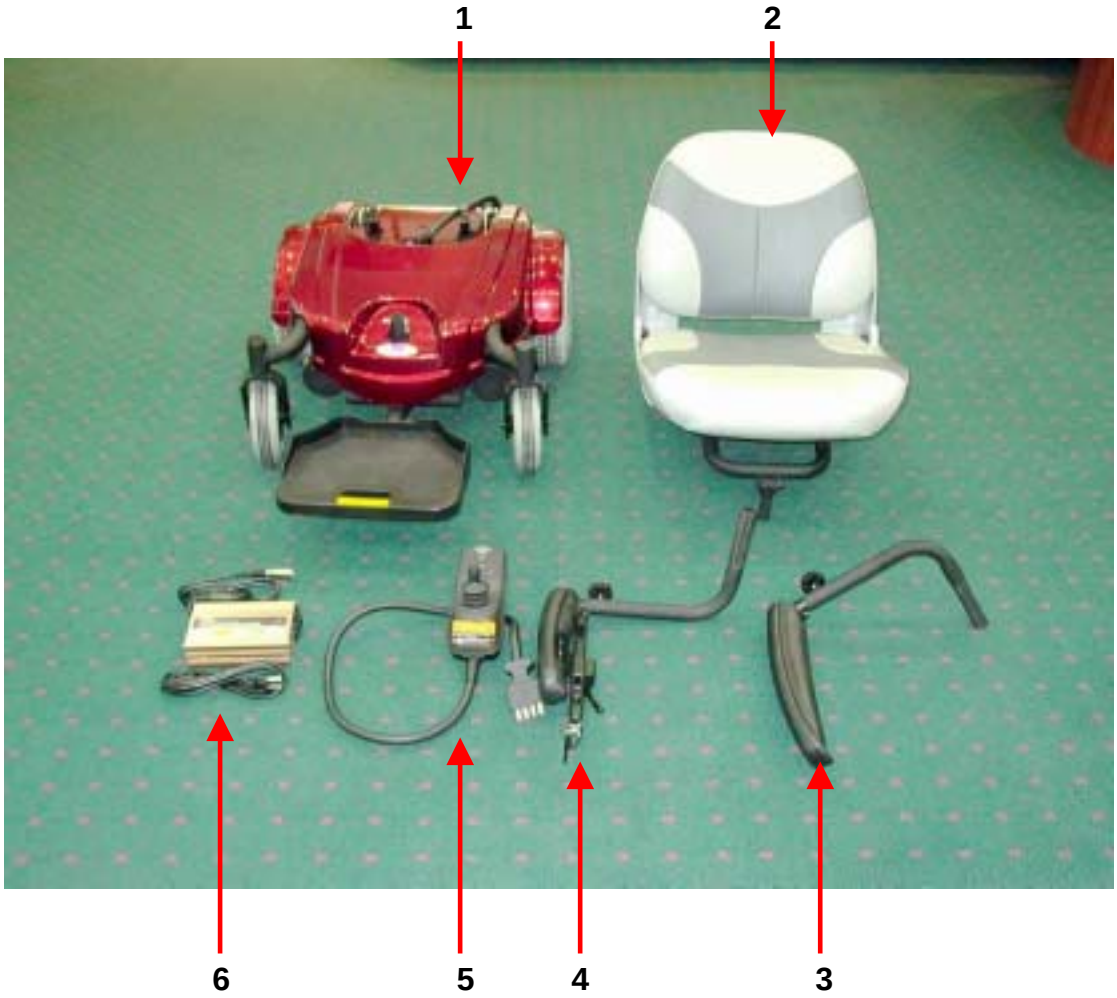
HEARTWAY **MEDICAL PRODUCTS CO., LTD.**

Part no:70030071

COMPONENTS

Your power wheelchair is shipped partially disassembled for protection during shipping. After unpacking, please check whether you have received the following main components as our standard specification (See Fig.1).

1. **Main frame with motor**
2. **Saddle set**
3. **Armrest(Left)**
4. **Armrest(Right)**
5. **Controller**
6. **Charger**



(Fig 1)

SAFETY INSTRUCTION

Operation of Chair

1. Always ensure that the power is switched off when getting in or out of the wheel-chair. This will eliminate the possibility of accidentally activating the joystick and causing injury to yourself or others.

2.Always check that the drive wheels are engaged (drive mode) before driving.

3.Set the speed control knob according to your driving ability and the environment in which you are going to operate. We recommend that you keep your speed at the slowest position (fully press the deceleration button) until you are familiar with the driving characteristics of the vehicle. We also recommend that you use the slowest speed when using your power wheelchair indoors.

4.Always reduce your speed when making sharp turns.

5.Do not switch off the power when the wheelchair is still moving forward. This will bring the chair to an extremely abrupt stop.

6.Avoid jerky stop/start motions as it will result in excessive current draw from the batteries, increased tire wear and the rapid wearing of the gearboxes and motors.

7.To brake in an emergency, simply release the joystick.

Ramps and Curbs

8. When driving up or down ramps, be sure to check that the angle of the slope is less than 10 degrees (slopes about 1/6). Also check that ramp surface is roughened to prevent slipping. Never drive across a slope or turn sharply on a slope.
9. When driving up curbs, always check the height of the curb to ensure that it does not exceed 1-1/2”(40mm) height.

Transfers, Reaching and Bending

10. Transferring on and off the HPS requires a good sense of balance. To eliminate the possibility of injury, we recommend performing the following tasks before attempting a transfer:
    - → Position chair so that the distance between your power chair and the object to which you are transferring is close enough for a safe transfer.
    - → Turn the power off
    - → Ensure that your power chair is not in freewheel mode.
    - → Flip up or remove armrests
    - → Flip up footplate or remove footrests
    - → Turn both caster wheels toward the transfer direction to improve power chair stability during transfer.

11. When reaching, bending or leaning while seated on your power chair, make sure that you maintain a stable center of gravity to keep the power chair from tipping.

General

Always use a seat belt, and keep feet on the footplate at all times.

12. For safety reasons, make sure that your weight does not exceed the recommended weight limit of the wheelchair. Consult your dealer for the specified weight limits for your particular model.
13. Do not attempt to lift or move a power chair by any of its removable parts. Personal injury and damage to the power chair may result.
14. Do not stand on the footplate directly.
15. Never try to use your wheelchair beyond its limitations as described in this manual.
16. Do not operate your vehicle if it is not functioning properly.
17. Do not connect any electrical or mechanical device to the vehicle. Failure to obey this instruction may result in injury and will void the warranty.
18. Never use electronic radio transmitters such as CB, walkie-talkies, portable computers or cellular phones while using the vehicle without first turning the vehicle off

Use While Under The Influence Of Medication Or Alcohol

19. Check with your physician if you are taking any medication that may affect your ability to operate your power wheelchair safely.
20. Do not operate your vehicle while you are under the influence of alcohol, as this may impair your ability to operate your power chair in a safe manner.

Electromagnetic interference (EMI) from Radio Wave Sources

1. The rapid development of electronics, especially in the area of communications, has saturated our environment with electromagnetic (EM) radio waves that are emitted by television, radio and communication signals. These EM wave are invisible and their strength increases as one approaches the source. All electrical conductors act as antennas to the EM signals and, to varying degrees, all power wheelchairs and scooters are susceptible to electromagnetic interference (EMI). The interference could result in abnormal, unintentional movement and/or erratic control of the vehicle. The United States Food and drug Administration (FDA) suggests that the following statement be incorporated to the user's manual for all power wheelchairs like the HP9 series.
2. Be aware of nearby transmitters such as radio or TV stations and try to avoid

coming close to them.

3.If unintended movement or brake release occurs, turn the powered wheelchair off as soon as it is safe.

4.Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to interference from radio wave sources.(Note: It is difficult to evaluate the effect on the overall immunity of the powered wheelchair).

5.Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a radio wave source nearby.

Power wheelchairs and motorized scooters (in this section, both will be referred to as powered wheelchairs) may as susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy emitted from sources such as radio stations, TV stations, amateur radio (HAN) transmitter, two-way radios and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the EM energy can be measured in volts per meter(V/m).Each powered wheelchair can resist EMI up to a certain intensity. This is called "immunity level". The higher the immunity level, the greater the protection. At this time, current technology is capable of providing at least 20 V/m of immunity level, which would provide useful protection against common sources of radiated EMI.

Following the warnings listed below should reduce the chance of unintended brake release or powered wheelchair movement that could result in serious injury:

Do not turn on hand-held personal communication devices such as citizens band (CB) radios and cellular phones while the powered wheelchair is turned on.

TURN OFF YOUR POWERED WHEELCHAIR AS SOON AS POSSIBLE WHEN EXPERIENCING THE FOLLOWING:

- Unintentional motions
- Unintended or uncontrollable direction.
- Unexpected brake release

The FDA has written to the manufacturers of power wheelchairs asking them to test new products to be sure they provide a reasonable degree of immunity against EMI. The FDA requires that a powered wheelchair should have an immunity level at least 20 V/m, which provides a reasonable degree of protection against more common sources of EMI. The higher the immunity level, the greater the protection. Your powered wheelchair has an immunity level of 20 V/m which should protect against common sources of EMI.

ENVIRONMENTAL CONDITIONS

Environmental conditions may affect the safety and performance of your power wheelchair. Water and extreme temperatures are the main elements that can cause damage and affect performance.

A) Rain, Sleet and Snow

If exposed to water, your power wheelchair is susceptible to damage to electronic or mechanical components. Water can cause electronic malfunction or promote premature corrosion of electrical components and frame.

B) Temperature

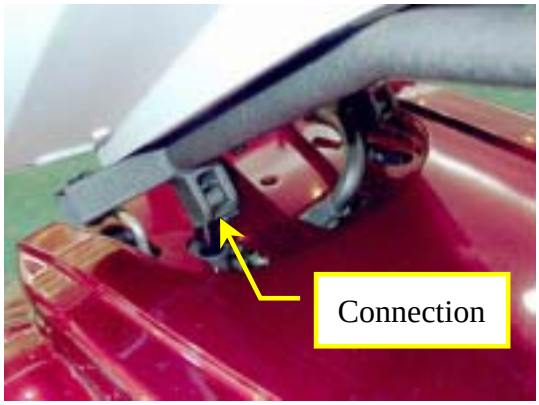
Some of the parts of the power wheelchair are susceptible to change in temperature. The controller can only operate in temperature that ranges between 18°F(-8 °C) and 122°F(50°C).

At extreme low temperatures, the batteries may freeze, and your power wheelchair may not be able to operate. In extreme high temperatures, it may operate at slower speeds due to a safety feature of the controller that prevents damage to the motors and other electrical components.

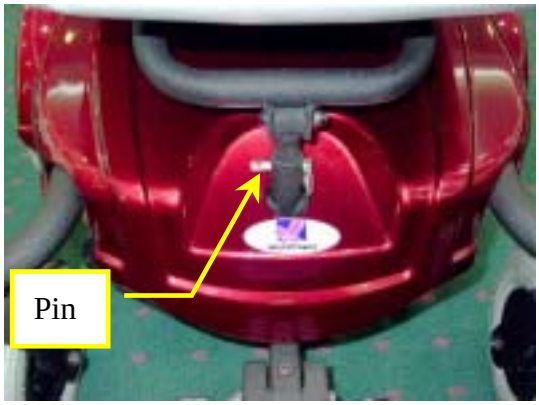
ASSEMBLY INSTRUCTION

1. Installing the Seat (#2)

Slide the seat (#2) into the Connection points (both sides) in the main frame (#1)(See Fig 2), put down the seat and insert the front tube into the outer tube. Inset the pin into the desire hole (See Fig3)



(Fig 2)



(Fig 3)

2.Installing the Armrest (#3,4)

Insert the armrest frame into the seat frame and tighten the tension knob. (See Fig 4,5)

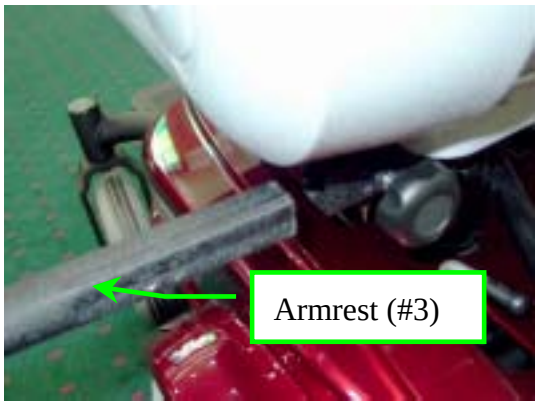


Fig 4

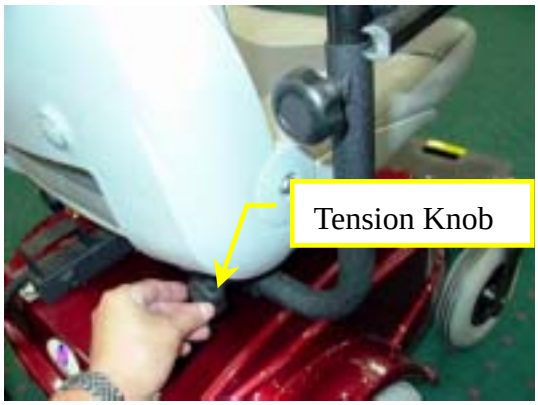


Fig 5

3.Installing Controller and Connect Cables

Assemble the controller (#5) on right armrest bracket with 2 screws.(See Fig 6). There is 1 main plug (9 pins) in the other end on the controller. Please plug in the main frame (#1), and make sure tightly connection.(See Fig 7).

Fig 6

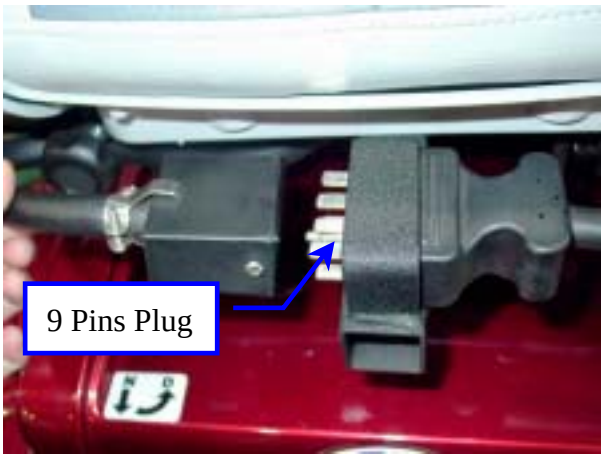


Fig 7

4. Installing the Batteries (you can omit this step if your scooter already assembled the batteries)

Take out the shroud from the base frame slightly. Both of them only attach by Velcro and simple attachment. Put the batteries to the battery loops and connect the cable (2 ends) with the batter positive and negative poles in 2 batteries. (See Fig8)

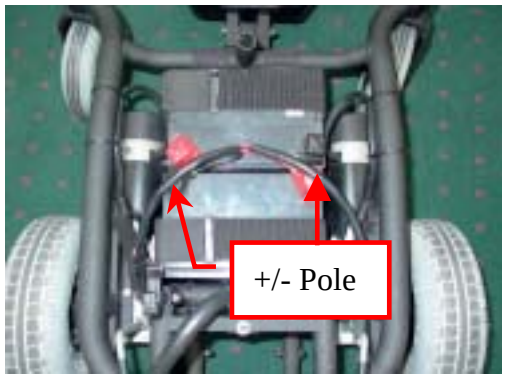


Fig 8

Note: There is a battery circuit diagram labeled on the backside of the shroud. Please refer this diagram before you assemble the battery.

ADJUSTMENTS FOR SEATING CONFORT

To maximize seating comfort, your power wheelchair lets you adjust:

→Armrest width

→Armrest height

→Armrest folding

→Footrest folding

→Controller position

A. Armrest Width Adjustment

→ Loosen the tension knob

→ slide the armrest frame to your desired width

→ tighten the tension knob.(See Fig 9)

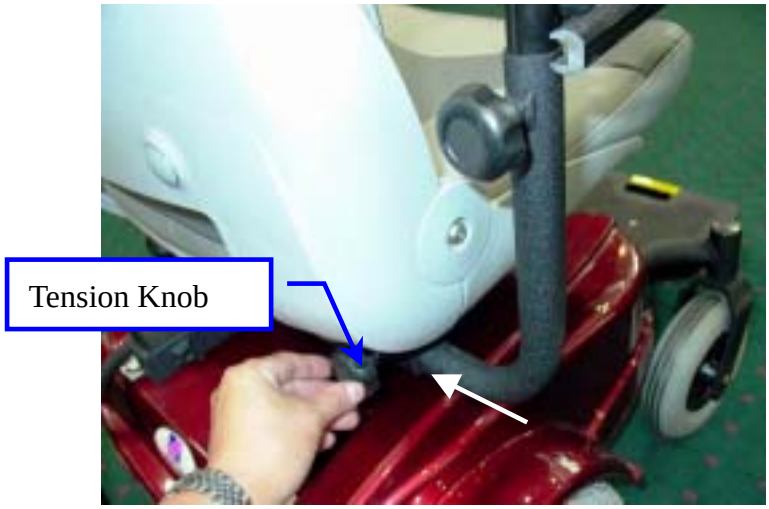


Fig 9

B. Armrest Height Adjustment

→ Loosen the tension knob

→ slide the armrest frame to your desired height

→ tighten the tension knob.(See Fig 10)

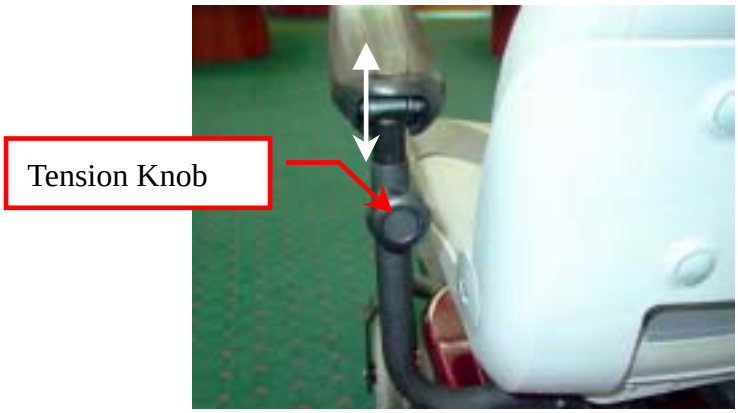


Fig 10

C Armrest Folding

You can adjust the left and right armrest folding by manual operation. (Fig 11)

D Footrest Folding

You can adjust the footrest folding by manual operation. (Fig 12)

Fig 11

Fig 12

E Adjust the Position of Controller

→ Loosen the tension knob

→ slide the controller support tube to your desired location

→ tighten the tension knob.(See Fig13)

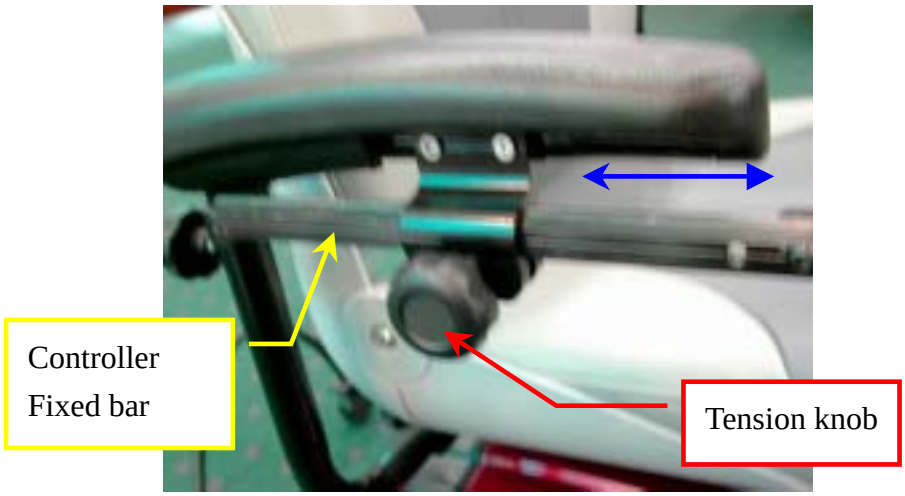


Fig 13

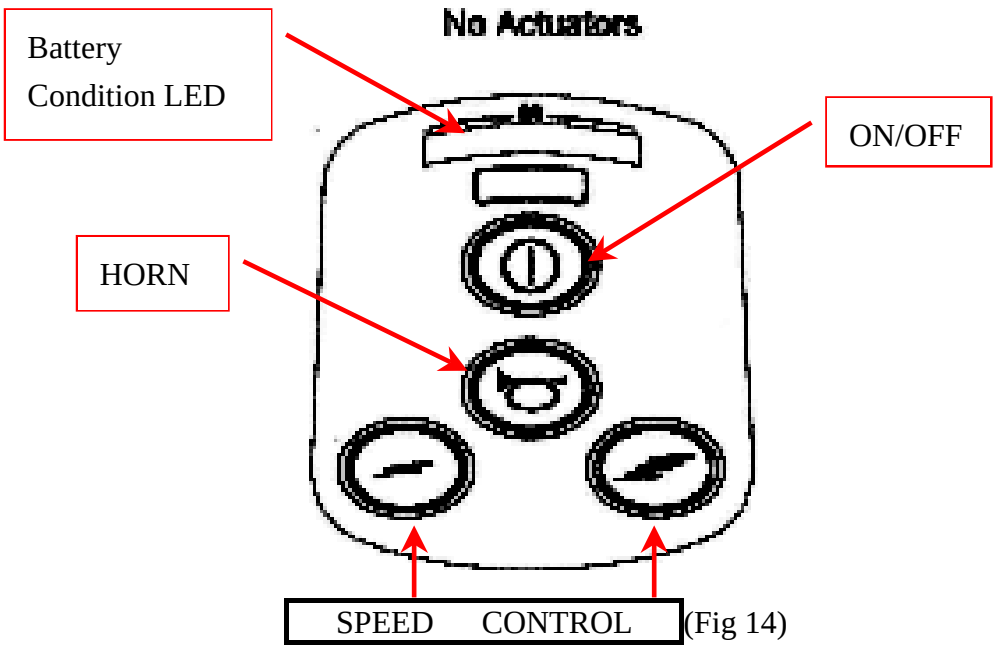
OPERATION

The power wheelchair is simple to operate. However, we recommend that you read carefully the following instructions to become familiarized with your new vehicle.

A Word of Caution:

Before you turn the power on, always be aware of the environment that surrounds you to select your desired speed. For indoor environments we recommend that you select the slowest speed setting. For outdoor operation of this vehicle we recommend that you select a speed that is comfortable for you to control it safely.

The following steps are required to operate your vehicle safely with HPS controller (See Fig 14)



(Fig 14)

A. Driving:

1.Controller ON/OFF Switch

Press the ON/OFF button (I/O) switch located in front of the joystick to activate your power wheelchair. The battery condition meter will light up to indicate the current charge of your battery. Pressing the ON/OFF button again will deactivate the controller.

2.Speed Control

The speed control buttons allow you to set the forward speed to your desired setting. Pressing the speed increasing button will set the speed at faster settings while the speed will slow down if you press the speed decreasing button. The controller sets the reverse speed, acceleration and deceleration proportionally and automatically for your safety.

3.Joystick

The joystick controls the direction, speed and tilt degree of your vehicle, pointing the joystick away from the neutral position (center) will move the vehicle in the direction where the joystick is pointing. The farther away(forward/backward) the joystick is from the neutral position, the faster the vehicle will go. The farther away to the right/ left the joystick is pointing, the sharper the turn of the vehicle will be. The farther away to the front/ back the joystick is pointing, more tilt angle of the seat will be. Gently push the joystick in the direction you want. Returning the joystick to its neutral position (center) will reduce the speed and stop the vehicle by automatically applying the electromagnetic brakes.

Notes:

→After pressing the controller ON/OFF switch, allows two seconds to elapse before engaging the joystick. This is a safety feature to prevent a sudden start.

→Gentle operation of the joystick will result in smoother transitions in speed and direction, while sharp operation of the joystick will result in drastic transitions in direction and velocity.

→When the wheelchair is in operation, the surface of the charger will become slightly hot.

→In case of emergency, let go of the joystick and the chair will come to a stop.

B. Controller Display

The controller display is a multifunction visual display. It can provide four types of information:1)ON/OFF status ,2)battery condition meter, 3) Horn , 4) acceleration and deceleration buttons.

1. ON/OFF Status

   When the power is on, the controller's LED will be lit up. If the LED is not lit, the controller is OFF.

2. Battery Condition Meter

   The battery condition meter is composed of 10 segments (three of red, four of yellow and three of green). It enables you to monitor battery charge. The battery condition meter indicates the approximate amount of battery charge left.

   →Red, yellow and green LEDs indicate that the batteries are fully charged

   →Red and yellow LEDs indicate that you should charge the batteries if possible.

   →Red LEDs indicate that you should charge the batteries as soon as possible, because low battery voltage may cause your power wheelchair to become inoperative.

Note: When the batteries begin to approach a discharged state, the first red LED will begin to flash slowly, reminding you that the batteries need to be charged immediately.

Free-Wheeling:

Because the motors are designed to engage the electromagnetic brakes when the vehicle is not in use or when the power is OFF. There is also a manual feature that allows them to “free-wheel”. Free- wheeling is accomplished by pulling the free-wheeling levers to the free-wheeling position. (See Fig 15)

Warning !

→Never free-wheel your power wheelchair on a slope.

→Never free-wheel the motors while operating your vehicle.

→Always remember to engage the motors before turning the power back ON.

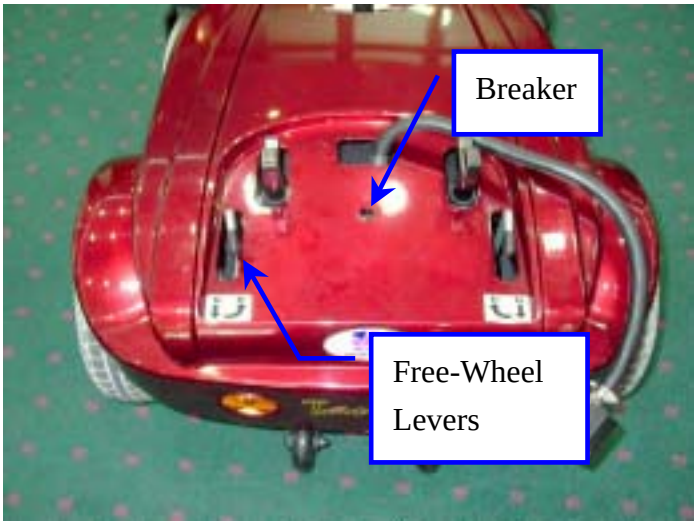


Fig 15

C. Electromagnetic Brakes:

Your power wheelchair comes with Electromagnetic Brakes, i.e. an automatic-magnetic disc safety brake which is also known as Fail-Safe brake.

The Electromagnetic Brakes are automatic and work when the power wheelchair is ON but in a steady state (i.e. joystick is released to the neutral position), even when the chair is on a slope. The Electromagnetic Brakes will also be set whenever the power wheelchair is OFF, but the motor levers are in the engaged (vertical) position.

Note: Please refer to the section titled to check brakes in the Maintenance & Repair section in page 17 to make sure brakes are in good condition.

D. Thermal Protection:

Your power wheelchair controller is equipped with a safety system called thermal rollback. A built-in circuit monitors the temperature of the controller and motors, the controller reduces the motor voltage and speed of the power wheelchair. The reduction of the speed allows the electrical components to cool down. Although your power wheelchair will resume its normal speed when the temperature returns to a safe level, we recommend that you turn the power off and wait for 5 minutes before restarting to allow the components to cool down if you find that you have lost speed suddenly.

E. Main Circuit Breaker:

The main circuit breaker reset button is located near the seat of the back side on the mainframe (Fig 15) .The main circuit breaker monitors the electric current drawn from the battery. It is a safety feature built in your power wheelchair for your extra safety. When the batteries and motors are heavily strained (e.g., from excessive loads), the main circuit breaker will trip to prevent damage to the motor and the electronics. If the circuit breaker trips, wait for approximately one minute and then depress the button to reset it. Then turn on the controller power, and continue normal operation. If the main circuit breaker continues to trip repeatedly, contact your authorized dealer.

BATTERIES & CHARGER

BATTERY

We recommend that you use deep-cycle batteries that are sealed and maintenance free for your power wheelchair. Both sealed lead-acid (SLA) and gel cell are deep-cycle batteries and are similar in performance. Deep-cycle batteries are specifically designed to provide power, drain down, and then accept a relatively quick recharge. Lead-acid batteries should be charged as often as possible.

Specification of the battery that we recommend:

Type:	Deep –cycle sealed lead-acid or gel cell
Size:	34AH(U1)
Voltage:	12V each
Amp Hours:	34 amp hours

Depending on the use, terrain and driving conditions, the batteries will provide a range of 19 miles of travel. However, even if the power chair is not in use, we recommend that the batteries be charged periodically.

Note:

→Do not use any automotive batteries. They are not designed to handle a long, deep discharge and also are unsafe for use in power chairs.

→The useful life of a battery is quite often a reflection of the care it receives.

CHARGER

The battery charger takes the standard wall outlet voltage (alternating current) and converts it into VDC (direct current). The batteries use direct current to run your power chair. When the batteries are fully charged, the amperage from the charger is almost zero. This is how the charger maintains

Note: The batteries cannot be charged after they are discharged but does not over-charge the battery. e discharged to nearly zero voltage.

CHARGING INSTRUCTIONS

To recharge the batteries, follow the steps below:

→Place your power wheelchair close to a standard electrical wall outlet.

→Turn the controller power OFF

→Plug the charger power cord (Round head) into the controller

→Plug the charger power cord into a standard wall outlet. A red and a yellow (if battery charge is low) LEDs will illuminate.

→When charging is completed, the yellow LED will turn green.

→Disconnect the charger power cord from the wall outlet when the batteries are fully charged. (See Fig 16)

Important!

Do not use for voltage input unless specified. Make sure your present voltage input (110V or 220V) and adjust manually. (See Fig 17)

Plug-in Controller | Plug-in Wall Outlet

(Fig 16)

(Fig 17)

Note:

→Always charge your batteries in well ventilated areas.

→The charger is intended for indoor use only. Protect from moisture.

→For maximum performance , it is recommended that you replace both batteries at the same time if the batteries are weak.

→If the chair will not be used for a long period of time, arrange to have the batteries fully charged for at least once every month.

According to the battery type and condition of the batteries, they usually can be fully charged in 4-10 hours. This will be indicated when the status light in the battery charger side panel turns green. Charging the battery longer than necessary will not harm the battery. We recommend that you charge the batteries for 8 to 10 hours after daily use. Do not charge the batteries for more than 24 hours.

MAINTENANCE & REPAIR

Your power wheelchair is designed for minimal maintenance. However, like any motorized vehicle it requires routine maintenance. To keep your vehicle for years of trouble-free operation, we recommend you the following maintenance checks as scheduled.

DAILY CHECKS

1. With the controller turned OFF, perform a joystick check. Make sure it is not bent or damaged and that it returns to center when you release it. Visually inspect the rubber boot around the base of the joystick for damage. Do not handle or try to repair it.
2. Visually inspect the controller harnesses. Make sure that they are not frayed, cut or have any exposed wires.
3. Inspect the battery condition meter on the controller to determine if batteries need to be charged.

WEEKLY CHECKS

1. Inspect the connections by disconnecting the controller and charger harnesses from the electronics connector housing. Look for signs of corrosion.
2. Ensure that all parts of the controller system are securely fastened to your power wheelchair. Do not over tighten any screws.
3. Check for proper tire inflation. Your power wheelchair comes with standard flat-free solid tires. If your power wheelchair comes with optional air tires, make sure to maintain the pressure of the tires between 30-35 psi.
4. Check the brakes. This test should be carried out on a level surface with at least three feet of clearance around your power wheelchair.

To check the brakes (your power wheelchair may move slightly when performing this test)

→Turn on the controller and turn down the speed and response adjustment knob.

→After one second, check that the battery condition meter remains on condition.

→Slowly push the joystick forward until you hear the parking brakes click then immediately release the joystick. You will hear each parking brake operates within a few seconds of joystick been released.

→Repeat this test of the brake for the back, left and right joystick positions

SEMI-ANNUAL CHECKS

1.Check the motor brushes. We recommend that your authorized dealer inspect the bushes every six months or sooner if your power wheelchair is not operating smoothly. If inspection determines excessive wear on the brushes, they must be replaced or motor damage will result.

Warning! Failure to maintain the brushes could void the power wheelchair warranty.

To inspect or replace the motor brushes:

1.Unscrew the motor brush caps. (See Fig 19)

2.Remove the brushes.

3.Inspect the brushes for wear (See Fig 18)

4.Replace the brushes if necessary.

New Motor Brush Worn Motor Brush

(Fig 18)

Motor Brush caps

(Fig 19)

1. Inspect the state of the battery terminals every six months. Make sure that they are not corroded and the connections are tight. Periodically apply a thin film of petroleum jelly on the surface of terminals to guard against corrosion.

PERIODICAL CHECKS

1. Make sure to keep the controller clean while protecting it from rain or water. Never hose off your power wheelchair or place it in direct contact with water.
2. Keep wheels free from lint, hair, sand and carpet fibers.
3. Visually inspect the tire tread. If less than 1/32”, please have your tires replaced by your local dealer.
4. All upholstery can be washed with warm water and mild soap. Occasionally check the seat and back for sagging, cuts, tears and replace if necessary. Do not store your chair in damp conditions as this will lead to mildew and rapid deterioration of the upholstery parts.
5. All moving mechanism will benefit from simple lubrication and inspection. Lubricate using petroleum jelly or light oil. Do not use too much oil, otherwise small drips could stain and damage carpets and furnishings etc. Always perform a general inspection of the tightness of all nuts and bolts.

Note: If you experience any technical problems, it is recommended that you check with your local dealer before attempting to troubleshoot on your own**.** The table below identifies the individual error codes. Error codes are displayed as a rapid flashing of the battery condition meter lights.

If you get one of these error codes, contact your local dealer.

FLASHING LIGHTS	DIAGNOSIS AND SOLUTION
1	The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.
2	The left motor has a bad connection. Check the left motor connection.
3	The left motor has a short circuit to a battery connection. Contact your local dealer.
4	The right motor has a bad connection. Check the right motor connection.
5	The right motor has a short circuit to a battery connection. Contact your local dealer.
6	The power chair is being inhibited by the battery charger. Unplug the battery charger.
7	A joystick fault is indicated. Make sure that the joystick is in the neutral (center) position before turning on the controller.
8	A controller system fault is indicated. Make sure that all connections are secure.
9	The parking brakes have a bad connection. Check the parking brake and motor connections. Make sure the controller connections are secure.
10	An excessive voltage has been applied to the controller. This is Usually caused by a poor battery connection. Check the battery connections.

The following symptoms could indicate serious problems with your power wheelchair. Contact your local dealer if any of the following arises:

1. Motor noise
2. Frayed harnesses
3. Cracked or broken connectors
4. Uneven wear on any of tires
5. Jerky motion
6. Pulling to one side
7. Bent or broken wheel assemblies
8. Does not power up
9. Powers up, but does not move